

Final Revision: July 5, 2015

Case Study

The effect of Buprenorphine and Bupropion in the treatment of Methamphetamine dependency and Craving

Jamshid Ahmadi, MD; Professor of Addiction Psychiatry

Founding Director, Substance Abuse Research Center, Dual Diagnosis Ward

Shiraz University of Medical Sciences

Shiraz; Iran

***Corresponding author:** Jamshid Ahmadi, Professor and Founding Director, Substance Abuse Research Center, Shiraz University of Medical Sciences, Shiraz, Iran.*

Jamshid_Ahmadi@yahoo.com

Abstract

Background: Methamphetamine dependency and abuse is a growing problem in the world.

Objective: To compare efficacy of buprenorphine and bupropion in the treatment of methamphetamine craving in a single case.

Results: Buprenorphine is more effective than bupropion in the treatment of methamphetamine craving.

Discussion: This case indicates although both buprenorphine and bupropion could be beneficial in treating methamphetamine dependency and withdrawal craving, however, buprenorphine is much more effective than bupropion.

Conclusion: To our knowledge there is not any report on buprenorphine use in the treatment of methamphetamine craving in Iran and other countries as well, therefore this case-study of an Iranian patient could represent the most innovative information.

Introduction

We describe a patient with methamphetamine dependency and craving who responded better to buprenorphine than bupropion.

Although mental disorders especially addictions have been a problem in the world including Iran, however, methamphetamine abuse was a minor problem in Iran until the last couple of years (1-12). Recently, there has been increased usage, especially among the young, with an increase in methamphetamine related psychiatric presentations to hospitals.

Formerly, methamphetamine was illegally smuggled in from the west, but it is now synthesized in Iran in 'underground' laboratories. The methamphetamine synthesized in Iran

is of higher potency and is commonly associated with psychosis. A single episode of use has been associated with persecutory delusions and auditory and visual hallucinations.

The approved use of buprenorphine (by FDA) is for the treatment of opioid withdrawal and also treatment of pain, and the approved use of bupropion (by FDA) for the treatment of nicotine dependency (13-27).

We ourselves prepared a simple and valid scale to ask and measure the craving/withdrawals for methamphetamine craving ranging from 0 to 10 (0 means no craving at all and 10 means severe craving and temptation all the time even during sleep time.

Craving range: 0 1 2 3 4 5 6 7 8 9 10

Buprenorphine is a partial mu receptor agonist, to my understanding it might be helpful in reduction of methamphetamine craving. Therefore, we are using buprenorphine as a new method for the treatment of methamphetamine dependency and craving.

This study was approved by the ethics committee and patient's informed consent was signed. To our knowledge there is not information on this matter in Iran and other countries as well, therefore this case-report of an Iranian patient could represent the most innovative information.

Case Presentation

AR was a single, 22 year old graduate in higher diploma and self-employed. He lived in Shiraz city of Fars province in south Iran with his parent. There was no personal or family history of medical problems, and no history of head trauma.

AR began daily smoking of methamphetamine and heroin 5 years ago -after his father death.

There was no history of cannabis or cocaine use in the past.

In short, when he was brought to hospital by his relatives, AR had been smoking methamphetamine and heroin daily for 5 years prior to admission (October 28, 2014). Physical and neurological examinations were normal. Serology for HIV and hepatitis were normal. Drug screening was positive for methamphetamine and morphine (consistent with methamphetamine and heroin use).

The common use of buprenorphine is for the treatment of opioid withdrawal and also treatment of pain. Buprenorphine is a partial opioid receptor agonist, it may be helpful in reduction of methamphetamine craving. Therefore, we are using buprenorphine as a new method for the treatment of methamphetamine dependency and craving(13-26).

AR was given buprenorphine 4 mg sublingually twice daily (we use buprenorphine twice daily to decrease the side effects of buprenorphine), to reduce methamphetamine withdrawal and craving for 2 weeks. He was closely monitored by every day interview asking craving of methamphetamine only and not heroin (based on the DSM-V criteria-American Psychiatric Association) ranging from 0 (minimum) to 10 (maximum). The craving scores for the 14 days of admission were: 7, 7, 6, 5, 4, 4, 2, 1, 0, 0, 0, 0, 0, and 0, respectively (Mean = 2.57).

AR was discharged after 2 weeks.

AR was taking buprenorphine 4 mg sublingually every day and was in good condition.

After 9 weeks, he stopped taking buprenorphine and developed methamphetamine craving. 4 weeks before second admission (February 3, 2015), AR again began to smoke methamphetamine and heroin.

Some research studies have shown positive effects of bupropion in the treatment of methamphetamine dependency (28). Therefore, in second admission, AR was given bupropion slow release 150 mg orally twice daily (as another effective option for the treatment of methamphetamine dependency and craving), to reduce methamphetamine withdrawal and craving for 2 weeks. He was closely monitored by every day interview asking about craving of methamphetamine ranging from 0 (minimum) to 10 (maximum).

The methamphetamine craving scores for the 14 days of admission were: 8, 7, 7, 5, 6, 5, 5, 6, 4, 5, 4, 4, 5, and 7, respectively (Mean = 5.57).

AR was discharged after 2 weeks with bupropion slow release 150 mg orally twice daily.

Discussion

This case illustrates although both buprenorphine and bupropion could be beneficial in treating methamphetamine dependency and withdrawal craving, however, buprenorphine is much more effective than bupropion.

As we know and also to our understanding, buprenorphine use in these conditions have not been reported previously, and this report is an important addition to the literature.

Conclusions:

To our knowledge, buprenorphine use in these situations have not been reported previously, and this case report is an important addition to the literature. This is a novel and interesting result. It is important that buprenorphine continues to be used with good effect in leading centers in Iran.

Conflict of interests: Nil

References

- 1-Ahmadi J, Fakoor A, Pezeshkian P, Khoshnood R, Malekpour A. Substance use among Iranian psychiatric inpatients. *Psychol Rep.* 2001;89:363-365.
- 2-Ahmadi J, Fallahzadeh H, Salimi A, Rahimian M, Salehi V, et al. (2006) Analysis of opium use by students of medical sciences. *J Clin Nurs* 15: 379-386
- 3-Ahmadi J, Pridmore S, Alimi A, Cheraghi A, Arad A, et al. (2007) Epidemiology of opium use in the general population. *Am J Drug Alcohol Abuse* 33: 483-491.
- 4- Pridmore S, Ahmdi J, Usage of download of psychiatry by Muslim countries. *Bulletin of clinical psychopharmacology.* 2011, Vol 21, No 2: 174
- 5- Pridmore S, Robinson J, Ahmadi J. Suicide for scrutinizers. *Australas Psychiatry.* 2007 Jun; 15 (3): 247-8.

6-Ahmadi J, Sharifi M (2013) Lifetime and Current Prevalence of Tobacco Smoking. J Addict Res Ther 4: 145. doi:10.4172/2155-6105.1000145

7-Ahmadi J, Ahmed MG (2013) Dubai Medical College Students' Attitudes towards Substance Use. J Addict Res Ther S6: 005. doi:10.4172/2155-6105.S6-005

8-Ahmadi, J. Khalili, H. Jooybar, R. Namazi, N. Mohammadaghaei, P. (1999), Epidemiology of cigarette smoking among Iranian general population. Presented at world Psychiatric Association, regional congress, Preventive Psychiatry. Athens' Greece, P: 88.

9-Khademalhosseini Z, Ahmadi J, Khademalhosseini M (2015) Prevalence of Smoking, and its Relationship with Depression, and Anxiety in a Sample of Iranian High School Students. Enliven: Pharmacovigil Drug Saf 1(1):005.

10-Ahmadi J, Ahmadi N, Soltani F, Bayat F. Gender differences in depression scores of Iranian and German medical students. Iran J Psychiatry Behav Sci 2014; 8(4): 70-73

11-Mackay-Smith M, Ahmadi J; Pridmore S, Suicide In Shooting Galleries ASEAN Journal of Psychiatry, Vol. 16 (1), January - June 2015: 50-56

12- Pridmore S, Ahmadi J, Psalm 137 And Middle Cerebral Artery Infarction; ASEAN Journal of Psychiatry, Vol. 16 (2), July - December 2015: XX-XX

13- Ahmadi, J., Bahrami, N. Buprenorphine treatment of opium-dependent outpatients seeking treatment in Iran. J Subst Abuse Treat. Dec; 23(4): 415-7, 2002.

14- Ahmadi, J. A randomized, clinical trial of buprenorphine maintenance treatment for Iranian patients with opioid dependency. *Addictive Disorders & Their Treatments*.

1(1): 24-27, 2002.

15- Ahmadi, J. Buprenorphine maintenance treatment of heroin dependence: the first experience from Iran. *J Subst Abuse Treat*. Apr; 22(3): 157-9, 2002.

16- Ahmadi J, Kampman K, Oslin DM. et al,. Predictors of Treatment Outcome in Outpatient Cocaine and Alcohol Dependence Treatment. *Am J Addict*. 2009;18:81–86

17- Ahmadi J, Kampman K, Dackis C, Sparkman T, Pettinati H Cocaine withdrawal symptoms identify Type B cocaine-dependent patients. *Am J Addict*. 2008 ; 17 (1): 60-64.

18- Ahmadi, J., Ahmadi, K., Ohaeri, J. Controlled, randomized trial in maintenance treatment of intravenous buprenorphine dependence with naltrexone, methadone or buprenorphine: a novel study. *Eur J Clin Invest*. Sep; 33(9): 824-9, 2003.

19- Ahmadi, J., Maany, I., Ahmadi, M. Treatment of Intravenous Buprenorphine Dependence: A Randomized Open Clinical Trial. *German J Psychiatry* 6:23-29, 2003.

20- Ahmadi, J. Human and Biobehaviorism (A new theory and approach), *Journal of Healthy Society*. Vol.3, No.14, February 1994.

21- Ahmadi, J. Psychiatry in the future; *Journal of Drug and therapy*, Vol.10, No.110, February 1993.

- 22- Ahmadi, J. Emotion and feeling; Journal of University Student and Research of Shiraz University of Medical sciences, Vol.1, fall 1993.
- 23- Ahmadi, J. Human and Pain; Journal of Healthy Society, Vol.3, No.13, December 1993.
- 24- Ahmadi, J. The effects of biological and environmental factors on human behavior; Journal of Healthy Society, Vol.17, No.1, fall 1992.
- 25- Ahmadi, J. Behavior therapy and Biobehavior therapy; a comparative view; Journal of Social Sciences and Humanities of Shiraz University, Vol.8. No 1 and 2, fall and Spring, 1992-3.
- 26- Ahmadi, J. A view on Biobehavior therapy; Journal of Pulse “Specific for Refreshment of Medical Community “Vol.2, November 1992.
- 27- Sadock, B., Sadock, V., Ruiz. P. (Editors) Kaplan & Sadock’S Synopsis of Psychiatry: Substance Use and Addictive Disorders-Chapter 20, Pages; 616-693, Lippinott Wiliams and Wilkins, Philadelphia (USA), 2015
- 28- Elkashef, A. et al, Bupropion for the Treatment of Methamphetamine Dependence
Neuropsychopharmacology (2008) **33**, 1162–1170; doi:10.1038/sj.npp.1301481; published online 20 June 2007